

Uncovering the Gaming Industry's Hidden Gems: A

Comprehensive Analysis of Video Game Sales

INTRODUCTION

1. Video Games Are a Big Business

Long gone are the days when hobbyist bedroom coders, with access to digital computers and “how to” articles of basic video game code, jumpstarted the formation of the video game industry (Wolf and Perron 2003; Izushi and Aoyama 2006). From enthusiasts developing and sharing their own video game ‘hacks’ to \$.25 per play arcade games and game consoles, the video game industry has evolved into a multi-billion dollar industry.

Shattering numerous records, Santa Monica based video game developer Treyarch, owned by video game publisher Activision, released the game Call of Duty: Black Ops where it set the highest opening day record for the gaming industry by selling almost 5.6 million copies for \$360 million (Snider 2010). These first day sales exceeded the best opening day box office ticket sales of \$73 million held by Twilight Saga: New Moon. Call of Duty: Black Ops outsold its former predecessor, also within the Call of Duty series, Call of Duty: Modern Warfare 2, by generating \$310 million on its first day of availability. Another notable first for Call of Duty: Black Ops was making an estimated \$650 million in the first five days it was available to consumers and reaching \$1 billion worldwide in sales in six weeks (Reisinger 2010).

Not only has the game industry shattered numerous sales records; it made large contributions to the economy. In 2009, the U.S. video game industry added \$4.9

billion to the U.S. Gross Domestic Product [GDP], attained \$10.5 billion in retail sales, and both directly and indirectly employed over 120,000 people (Siwek 2010).

The video game industry is also highly concentrated in the following states: California, Texas, Washington, New York and Massachusetts (Siwek 2010). In 2008, the video game industry in Massachusetts employed 1,200 workers, while earning almost \$2 billion in annual revenue (Brown 2010). Even with low industry employment, compared to the rest of the nation, Massachusetts has a rich and fascinating relationship with the video game industry.

Drawing from his love of science fiction, Massachusetts Institute of Technology student Steve Russell, in 1961, created one of the earliest known video games, Spacewar (Kent 2001). Russell's affiliation with the Tech Model Railroad Club [TMRC] at MIT allowed revisions or 'hacks' by members that included integral game elements such as computing for virtual gravity and stars. The members of TMRC were also credited with creating the first game controller that could be plugged into a computer and have dedicated knobs and switches to play Spacewar (Kent 2001). These plastic knobs and switch controllers, created by the MIT hobbyists, evolved into playable, instrumental controllers for the video game Rock Band 3 developed by Harmonix Music Systems Inc. of Cambridge, MA (Simons 2007; Brown 2010).

Massachusetts's strong relationship to the video game industry solidified through hosting one of the largest gamer enthusiast festivals, Penny Arcade Expo [PAX]. The annual game festival, with origins in Seattle, WA, held its first East Coast conference in March of 2010 in Boston. The event drew more than 52,000 attendees and contributed an estimated \$16 - \$19 million to the Greater Boston economy (Brown 2010).

Recently, a handful of local universities in Massachusetts interested in the video game industry, recently created curriculums focusing on video gaming. Worcester Polytechnic and

Becker College ranked in the Top 8 Undergraduate Game Design Programs by The Princeton Review (Glasser 2010). In 2006, MIT collaborated with the Republic of Singapore to develop the Gamers, Aesthetics, Mechanics, Business, Innovation, and

Technology [GAMBIT] Labs. Located within the MIT Humanities Department, this research lab creates partnerships between MIT and students from Singapore to develop games that incorporate methodologies and theories that are not yet ripe for commercialization (BostInnovation 2010). The Berklee College of Music, located in the heart of Boston, offers classes for video game production and composition within their Film Scoring Department and also sponsors the Video Game Orchestra that plays popular video game scores (Kahn 2010).

Even state government has taken an interest in the video game industry. Massachusetts's governor Deval Patrick and his administration declared the month of June as Innovation Month in 2010. This dedication commemorated the rich history of the video gaming industry as well as acknowledged the accomplishments of Cambridge based Harmonix Music Systems. The Massachusetts legislature, at one point, proposed to include tax incentives for the video game industry (Brown 2010). Worcester, MA, a city outside of Metro Boston, will be the site of Massachusetts Digital Games Institute. Unveiled on April 26, 2011, this organization hopes to make Worcester the 'hub of video gaming in Massachusetts.'

Contributions

This growing industry has become important economically and politically, but surprisingly, little published research has closely examined the location requirements and the motivations of the video game industry in the United States. This lack of literature creates an excellent opportunity to examine how the industry began, the types of occupations needed to produce a video game, the needs of the video game workforce and the locations of these occupational clusters within U.S Metropolitan Areas.

This research takes an occupational approach to the video game industry. Economic development policy is focusing more and more on the creativity of an individual and the types of outputs an individual or group of people will produce (Feser 2003; Koo 2005; Markusen, Wassall et al. 2008; Nolan, Morrison et al. 2011). This research focuses on the idea of the creative economy as a form of economic

development. The investigation will first attempt to identify the key occupations needed to produce a video game from conception to distribution and to identify the types of occupations within the industry for analysis. An occupational approach in regional economy gives policy makers an idea of what a region is already capable of producing with the existing labor force. For the video game industry, this research examines what forms of human capital these key occupations are capable of generating.

Identifying what forms of human capital these key occupations are producing is just as important as locating where the highest concentrations of the video game workforce are in metropolitan areas. The location of the workforce informs policy makers on the best approach to increase regional success through examining other regions. In addition, knowing the forms of human capital of the video game workforce helps formulate policies to reflect job creation.

Defining Video Games

Academic literature defines video games as interactive media, electronic games, or entertainment software. Jennifer Johns (2006), defines video games as interactive media. She argues products like games span a range of products not confined to the video or computer screen. Mark Wolf and Bernard Perron (2003) argue, that terms such as electronic software, electronic games, entertainment software and other referenced phrases used to describe video games are too broad and could include any game that has electronic components. They refer to

Milton Bradley's physical board games that often have electronic components, whose only electronic part is a blinking light. They also argue that the 1979 board game Stop Thief and other board games use handheld computers to make sounds related to actions on the board are in fact computer games but not video games. In addition, a variety of academic, policy, and popular texts use the term video

games more often than the previously mentioned definitions. For that purpose, this paper uses the term video game.

A Brief History of Video Games

Computer technology was primarily intended for serious calculations and other research that eventually turned into a medium for the video game industry (Haddon 1988). In the 1950's, 'Computer Science' at The Massachusetts Institute of Technology was beginning to become a scholarly discipline. At around the same period, the university started to teach a course and created a department on 'Artificial Intelligence.' Coincidentally, the National Aeronautics and Space Administration [NASA] began increasing support and funding for basic computer research furthering the development of Artificial Intelligence, and the university received, as a gift, a minicomputer, the very first generation of personal computers (Haddon 1988).

Support from the private and public sectors allowed the first generation of game developers in the United States to flourish. The MIT Tech Model Railroad Club, a student group, began developing software while continually testing, modifying, and enhancing programs and the minicomputer. These alterations were termed 'hacks.' Prior to Steve Russell's development of Spacewar, various other games were currently being hacked by the TMRC. These computer games included chess, a version of table tennis, and a basic form of solitaire. However, these games were not as visually stunning or as interactive at the time as Spacewar. As one interviewee mentions:

Russell's video game Spacewar, developed on the DEC minicomputer was shown to the public in 1962 by MIT. DEC acquired a copy and began supplying the game to their clients and used by their sales force as a marketing tool. Although not originally intended for distribution, Spacewar has been written into the history books as the first developed video game (Haddon 1988).

In 1971, Nolan Bushnell moved Spacewar from minicomputers into coin operated machines in what known later as arcade games. Prior to developing Spacewar as an arcade game, Bushnell an engineering student at the University of Utah, had some exposure to Spacewar in 1962. In 1970, Bushnell, along with Ted Dabney, created a machine that connected to the television in order to play Spacewar. He called the game Computer Space. Bushnell, who was then working for Nutting Associates, manufactured the Computer Space game in 1971 and sold it along with a television screen. It did not become a success as players found it too difficult to play. Bushnell left the company a year later when he and Daney subsequently established their own company to develop video games, called Atari. In the same year, Bushnell hired Al Alcorn and developed a video tennis game called, Pong. They field-tested a coin operated machine version of the game in a local bar. In less than a month, the machine broke down due to being overwhelmed with quarters (Kent 2001).

The success of Pong gave rise to one of the first large video game companies in the United States. In the late 1970's, other companies followed. Nintendo, a Japanese company that previously sold game cards, released a video game called Othello into the U.S. market. Another company from Japan, Midway, imported the video game Space Invaders from Japan for the American public, which then broke all known sales records around that time (Kent 2001).

Since their inception, video games have evolved with new technological advancements (Johns 2006). Computer chips and circuit boards revolutionized computer technology in the late 1970's and 1980's. The early games required the consumer to purchase an entire console with an embedded chip that would only play one or a few games. The evolution of the microprocessor allowed game companies to create chips inside portable cartridges. The cartridges only went into the appropriate personal gaming console. These cartridges were eventually replaced by compact discs, the current standard for all of the best selling game consoles today (Kent 2001).

Not only were game consoles evolving, so was the personal computer. Advancements in sound and video cards and processing chips made computers more appealing for gaming. The computer-disc read-only memory [CD-ROM], a powerful portable disc, opened the door for entrepreneurs, giving them the

opportunity to create games for the personal computer. Games like Myst developed by Cyan Studios, Wing Commander developed by Origin Systems, and Ultima Underworld by Looking Glass turned the PC into a game console. Other mediums, like the internet, allowed the user to play Massively-Multiplayer Online Role Playing Games [MMORPGs] (Ducheneaut, Yee et al. 2006), while mobile devices can now support high-resolution video games, (Soh and Tan 2008) and recent advancements allows for three dimensional spatial interactions through platforms such as the Nintendo Wii and Kinect for Microsoft Xbox (LaViola Jr 2008; Gaudiosi 2010).

The video game industry has also expanded to other industries, and early leaders have created many spinoffs and subsidiaries as former workers have started their own companies. Figure 1, represents a small representation of how some of the larger video game companies, like Atari, created or had previous workers who were influential in other businesses and industries. For example, programmers from Atari, who were dissatisfied with not having their name displayed in game credits, left and formed Activision. The company, Activision, might have been the industry's first third-party game developer. One of the co-founders of Atari, Nolan Bushnell, ventured into the restaurant business; he named the business enterprise Pizza Time Theaters and called the restaurants Chuck E. Cheese. The Seattle Mariners, a Major League Baseball team, had plans to move to Florida, until Nintendo of America bought a majority stake in the team. Former employees of Atari and Nintendo have moved to other game businesses like Sony and Microsoft. While this is not a complete picture of the video game industry, it does show the evolution and expansion of a growing industry with no signs of stopping.

CONCLUSION

Summary

The video game industry is a multifaceted industry, collecting a number of different talents and skills that ultimately produce a product for public consumption. This industry is heavily rooted in the knowledge of computer and technology related material. From this research, the video game industry also includes talented individuals in business and from the audio and visual arts. Since this industry has a diverse workforce, this research has shown communication when working in a teamwork environment is important to be successful in the video game business. Also self-learning, the ability to teach yourself new and innovative technologies is important to solve complex problems within the industry.

Self-learning and working as a team aligns closely with traditional high-tech regions within metropolitan areas. From this research's spatial analysis, much of the workforce is in traditional high-tech regions within the United States. The potential video game workforce relates closely to colleges, universities, and research facilities that have a strong foundation in the arts and sciences.